U.S. Environmental Protection Agency
Science Advisory Board
SAB Workgroup on Katrina Soil and Sediment Sampling Plan
Additional Collected Individual Comments on U.S. EPA Region 4 "Quality Assurance Project Plan, Katrina Response, Environmental Soil and Sediment Sampling, Gulf Coast of Mississippi, September, 2005"

As of October 5, 2005 (8:30 a.m.)

Samuel Luoma

I cannot add too much to the comments you sent along, other than to concur with the conclusions about fuzzy objectives and the importance of making the sampling approach compatible with objectives. There are two additional details that might be helpful to the team.

1. As Ivan noted, soil and sediment texture (particle size) will be a very important confounding factor in determining if contaminants were mobilized or if soils or sediments are contaminated. In practical terms it is the fine-grained material that is of the greatest concern for human health (dust, under fingernails, ingestion, mobility etc.) and the most likely to cause difficulties (be mobilized) when the sediments are moved. False negatives are a strong possibility if the particle size is not removed; especially where so much physical energy was involved. Minimizing the particle size bias involves more than just removing pebbles; sands, silts and clays will give very different results when exposed to same input of contaminants. I would recommend isolating fine-grained materials from a subsample from each site OR analyzing all samples for Al, Ti and Organic C...all markers of clays or surface area for inorganics and natural controls or organic chemicals. That would aid interpretataions with regard to regulatory critieria (i.e. assure low values are not just diluted with sand) and provide a basis for understanding if samples are beyond the regional baseline of contamination.

2. False negatives, or at least questionable conclusions from the point of view of public trust, are also possible if the only basis for decision making is compliance with regulatory standards. Even though the present effort is just a "snapshot", the data will be useful and credible if there is some objective basis for comparing concentrations in these facilities to the regional baseline created by the storm. This does not require an exceptional effort. I believe five sites outside the influence of industrial contamination should be sampled; just as the industrial sites are sampled. Comparisons could be normalized for Al or Organic C (as above) and give a quick snapshot of the degree of any contamination issues. Any study like this needs "controls" for perspective; even though it is often the last thing some institutions want to fund.

Samuel N. Luoma
Fulbright Distinguished Scholar, 2004
Scientific Associate
The Natural History Museum London